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Prevention of the Deleterious Effect of Sulphur.

The novel applications of india rubber render many processes for its vulcanization necessary, which are not carried on without danger to the health of the workmen engaged in the operation. The sulphide of carbon attacks the animal economy with the greatest violence; its ravages, because not immediately observed, are not the less disastrous; it causes an extreme feebleness, gives a cadaverous hue to the features, and a failing memory and a general appearance of idiotcy are its results.

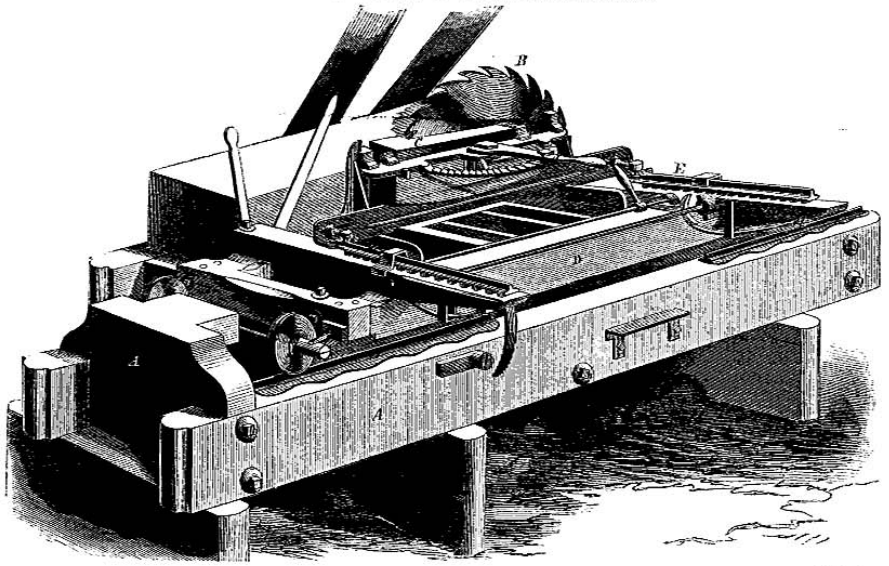
Against these evils a careful experience has proved the efficacy of carbonate of iron dissolved in water. Any ferruginous water is good, but the carbonate taken with a little seltzer water, occasionally, is decidedly the best.

We should recommend manufacturers of vulcanized india rubber to keep in the workshop a little barrel of this cheap curative, so that it might be used by the workmen as a beverage, and thus in some measure stop the ravages which the work is making on the healths of those employed in the various manipulations required in the preparation of this new material.—*Le Génie Industriel.*

Manufacture of Cotton Fabrics.

The art of manufacturing cotton was derived by Europeans from the Hindoos, who have made cotton cloth from the most ancient times, and still surpass all other nations in the exquisite delicacy of their fabrics. The Mexicans also, at the conquest of Cortez, were clothed in cotton fabrics of superior beauty and fineness. All the ordinary cotton fabrics are imitations of the original manufactures of India, and bear the native names of the places where they were once manufactured. Calico is a general name applied to printed cloths made from cotton; it is derived from Calicut, from which place it was first imported in 1631. As the quality and strength of calico increase, it is called long cloth, duck, and double warp. Factory shirting has superseded linen. Factory sheeting is in like manner substituted for linen sheeting. Printed calicos, or briefly prints, were originally imitations of Indian fabrics, but have long been produced in multiform variety and quality. Chintz is a variety of prints in which the figures have at least five different colors. Muslin is distinguished from calico by the essential difference of its superior fineness; the name is supposed to be derived from Masulipatam, from which place muslins were first imported. The Indian muslins are made of a tissue so exquisite as to justify the name given to them in the East—"webs of woven wind." Of a specimen in the museum of the East India Company, twenty yards weighed only a grain; a pound would have reached 115 miles.

SMITH'S PATENT SHINGLE MACHINE.



Few branches of mechanical invention have attracted more attention than a machine for cutting shingles. The first patent of which we have any record was granted to Bill Jarvis, of New York city, July 8, 1797; and since that time one hundred and seventy-six patents have been issued for various modifications and improvements, and it is not unreasonable to suppose that at least one hundred cases have been rejected. Genius is always exercised on a subject in proportion to the demand for it. Hence we see that the plow, the pump, the churn, the steam engine, the shingle machine—all subjects of more or less demand—have received a degree of attention much greater than many other classes of inventions.

The machine we are about to describe is one of the best, although not the newest; but it maintains a character for efficiency above many of its younger rivals, an evidence of which is that it took the gold medal at the Annual Fair of the American Institute at the Crystal Palace, this year.

One great advantage of this special machine is, that it admits of a vertical planer being attached, which will smooth that side of the shingle that is to be exposed to the weather, and thus prevent the water from lodging on it, and causing it to warp and crack under the influence of sunshine. A machine with this attachment was recently exhibited at the Crystal Palace, and a full description will be found on page 62 of the present volume of the SCIENTIFIC AMERICAN.

In our illustration, A represents the frame, which is of great strength. B is the saw, the ordinary circular one being employed. C is the stuff that is being cut into shingles. D is a carriage running on tramways on the frame, A, which feeds the stuff to the saw while being cut. On D is mounted the arrangement, E, which, when a shingle is cut off, causes the stuff to advance in the direction of its thickness just enough to allow of another shingle being cut of equal dimensions with the first. From the great quantity of iron which enters into the construction of this machine it is very durable, and possesses all those advantages which iron has over wood.

A patent was secured by the inventor, William Smith, and the machines are now manufactured by Messrs. Hinckley & Egery, of Bangor, Me., from whom all further information can be obtained.

The Smithsonian Aquarium at Washington.

A fine marine aquavivarium, or aquarium, has been prepared at the Smithsonian Institution, where the public can now inspect its curious contents. It is said that an eminent French zoologist, in order to prosecute his studies on marine animals of the Mediterranean, provided himself with a water dress, glass helmet and breathing tubes, that he might walk about under water, and mark the habits of the various creatures pursuing their avocations. Any one who will visit the Smithsonian aquarium may enjoy the same opportunities, and become acquainted with the strange animals and plants of the sea without diving to gaze on them.

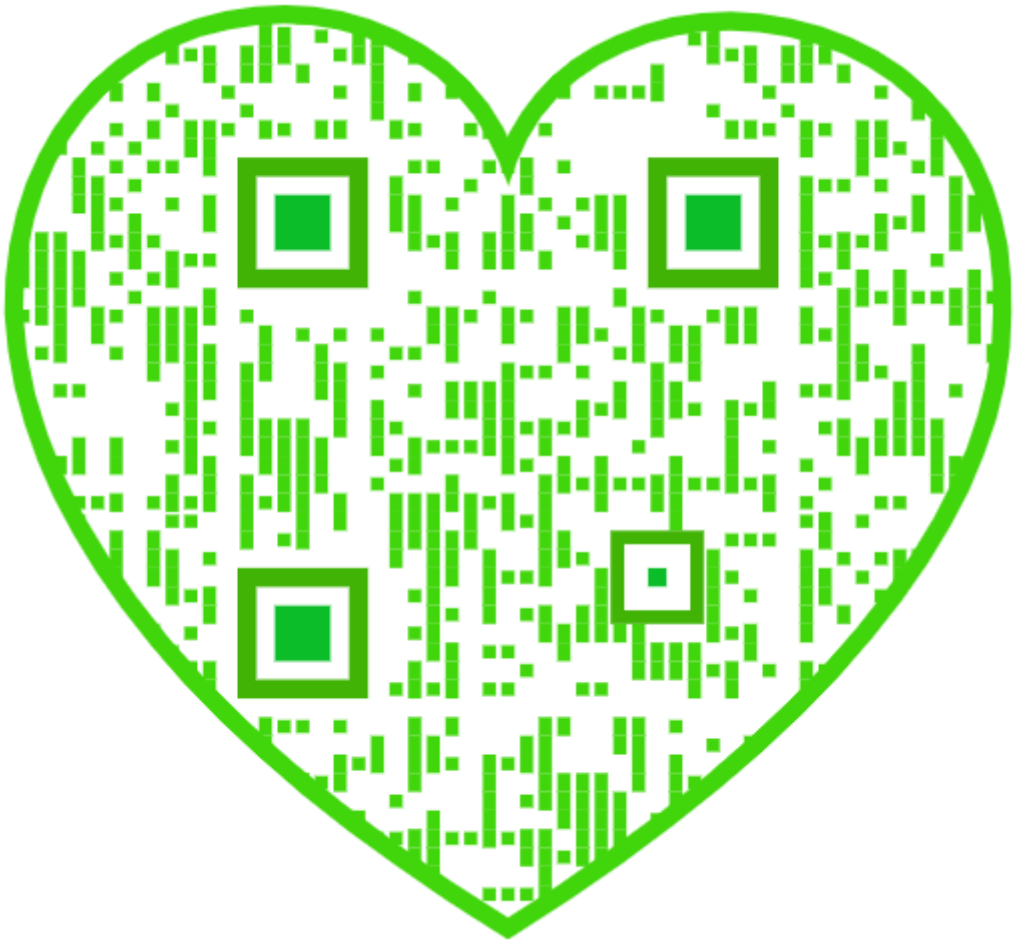
The aquarium is simply a glass tank, erected on a table, and filled with sea-water, in which flourish marine plants and animals without any aid, or even changing the water.

The bottom of the Smithsonian aquarium is an imitation of the bottom of the sea, composed of silver sand, coarse sand and pebbles. In the center is a mass of rock, giving shelter and concealment to such animals as like concealment, while jotted about are growing specimens of fuci and algæ. In this miniature ocean cave are about three hundred specimens of animal vitality, belonging to some thirty-eight species of fishes, molluscæ, crustaceæ and polypes. Some of these burrow in the sand, or modestly hide among the pebbles; others, like the hermit crabs, having taken possession of vacant suits of submarine armor, flourish about belligerently, ready for a fight. Some are perfectly transparent, like animated particles of jelly; others are enshrined in their shells. The curious "horse-fish" paddles about with his filmy dorsal fin; and a lethargic clam protrudes its siphons, enveloped in a shaggy fringe; a solitary flounder was evidently annoyed when rooted out, and immediately burrowed himself again in the sand; while two pugnacious crabs fought gallantly over an *amphitrite auricoma*, which had been obligingly sacrificed that we might see its golden combs.—*Washington Union.*

Trial of Fire-arms.

A trial of various war agents, as we learn from the *Union*, took place at Washington on the 9th inst., before the Secretary of War, the members of the foreign legations, and a number of our army and navy officers. A new train fusee was used to fire a cannon at a long distance, and succeeded perfectly. The cannon was fired rapidly at several hundred yards' distance, part of the fusee passing through 150 feet of water. New rockets were also experimented with at a distance of 950 yards, and were fired from a carriage with great accuracy. The great feature of all the exhibition, however, was the breech-loading rifle of Mr. Morse, of Louisiana. The Secretary of War, who appears to be a crack shot, hit the target repeatedly at 850 yards distant.

This rifle is very complicated in its breech-loading and discharging arrangements, but is said to operate with precision. The charge is contained in small metallic cartridges, which have at one extremity a conical-pointed, hollow ball, and at the other extremity is the percussion cap. The piece is loaded and fired by four motions, viz.: the first opens the breech, withdraws the shell of the last cartridge fired and cocks the piece; at the second motion the loaded cartridge is inserted; the third motion closes the breech; and at the fourth motion the cock can be let down, or the piece fired. After the most severe tests there was no evidence of the escape of any gas, except at the muzzle of the piece. The cartridges used were waterproof, as all such should be; after being soaked in water, they could be made use of freely.



Patent Claims

Issued from the United States Patent Office

FOR THE WEEK ENDING DECEMBER 8, 1857.

[Reported officially for the Scientific American.]

CHURNS—Benjamin Beers, of New Fairfield, Conn.: I claim a rotating dasher with spring floats, constructed and arranged substantially as described, so as to churn the cream and work the butter, substantially in the manner set forth.

CORN PLANTERS—J. H. Bonham, of Elizabethtown, O.: I claim a conical seed reservoir, G, in combination with the cups or disks, A, figs. 4 and 8, operated by the handle, x, and constructed and arranged in the manner and for the purpose set forth.

I also claim the conducting spout, F, in combination with tilting pins, I and block or bottom, E, constructed and arranged as set forth.

BILLIARD TABLE CUSHIONS—I. M. Brunswick, of Cincinnati, O.: I would state that I am aware that rubber, caric and leather have been used in forming a cushion; this I do not claim.

But I claim the combined use of cork, rubber, pasteboard and leather, when used in the order enumerated, by which means I produce a better cushion, as set forth.

CUTTING APPARATUS OF MOWING MACHINES—Chester Bullock, of Jamestown, N. Y.: I claim first, The mode described of attaching the cutters to guard teeth, and to the cutter bar, in combination with the shortened lip, by which I am enabled to readily detach said cutters for grinding or for other purposes as set forth.

Second, A hollowed cutter, so arranged in connection with other parts as to present the same or nearly the same cutting angle in every part of the stroke, when the teeth are biased to their ends, a, forward of the cutting parts as set forth.

TREATING HEMP FLAX AND OTHER FIBROUS MATERIAL—I. W. Burton, of Eye, England, and George Pye, of Ipswich, England. Patented in England March 29, 1856: We do not claim merely heating or boiling fiber in water.

But we claim the described mode of treating flax or fibrous matters requiring like treatment, the same consisting in subjecting such as described to the action of a press, and to water impregnated with Fuller's earth and heated or boiled.

SEED PLANTERS—James Carroll, of Laporte, O.: I claim the employment of the handle, B, furnished with a discharge passage, in combination with a slide, f, which has a hand trigger, n, and with the peculiar conducting tube, A, which is furnished with shares, a a, substantially as set forth.

[This invention has for its object the ready adjustment of the distributing device, whereby a greater or less quantity of seed as desired may be measured and dropped from the hopper in hills or drills. It is a simple, efficient, durable, and cheap implement for manual operation.]

PLOWS—Jarvis Case, of Springfield, Ill.: I claim hinging the tongue to the beam of a plow, and extending a lever or lever rest, down one side of the plow, so that the driver mounted on the plow may, by said lever, throw the plow or plows out of the ground, as set forth.

I also claim supporting the front of the beam at the center of an axle, c, supported in wheels, e e, so that said beam may be raised or lowered on said axle, but not affected by the passing of said wheels over the rough ground, as set forth and explained.

AGRICULTURAL FORKS—Chas. Clow, Alexis Clow, and Chas. N. Clow, of Port Byron, N. Y.: We are aware that manure forks have been constructed with cast malleable iron heads, with sockets for the tines; but in all such forks the sockets have been provided with the socket in which the handle was inserted, which cannot be done with barley forks, for reasons hereto-fore given.

We therefore wish it expressly understood that we do not claim a fork constructed with a cast malleable iron head of itself considered, nor any such head in which the sockets for the tines are parallel to the socket in which the handle is inserted.

But we claim jointing the bow, E, on to the head, for the purpose and in the manner substantially as described.

BILLIARD TABLE CUSHIONS—H. W. Collender, of New York City: I do not claim a cushion with a comparatively solid face, and perfectly elastic back, when formed of rubber, cork and leather, as this was patented by M. Thelan, in 1856.

But I claim as a new, better and cheaper mode of carrying out the principle involved in said cushion, the use of the two rubbers possessing the different qualities or degrees of elasticity specified for the purpose of producing a rubber spring cushion, with a comparatively solid rubber face, and an elastic rubber back, substantially as set forth.

[For a further description of this, see another column.]

PLANING MACHINE—John D. Dale, of Philadelphia, Pa.: I disclaim all parts separately of the before described machine that are not hereinafter specifically claimed by me.

But I claim, first, The arrangement as described by which the support rollers, No. 17, and the feed roller, G, are raised, and the carriage, E, simultaneously secured, whereby I make a permanent bed and continuous feed, and by lowering the same, I make a reciprocating moving bed plate or carriage, and am enabled to change from one to the other, at the will of the operator.

Second, I claim the arrangement, whereby an adjustable cutting bed, No. 37, is formed on the end of the movable carriage, E, for the uses and purposes as described.

Third, I also claim the combination and arrangement of the method set forth for attaching side cutters, by which they are both rendered adjustable in the manner specified and described by letters, G G, representing cranes supporting the side cutters bearing on screws, K K, supported and adjusted by guide braces, L L, and screw nuts, J J, all for the purpose and in the manner set forth and described.

Fourth, I also claim the particular arrangements in combination, by which the pressure bar, N, and the transverse bar, Q, are made to raise, and by which they are made to correspond with the circumference of the rotary cutter by raising the superior feed roller, D, for the purpose as set forth.

SEWING THIMBLE—John Devlin, of Philadelphia, Pa.: I claim the application of a guard or fender to the outer side of a sewing thimble, substantially as and for the purpose set forth and described.

MACHINE FOR BORING HUBS—Zina Doolittle, Perry, Ga.: I do not claim the use of a shaft or a knife set in the shaft; neither do I claim the yokes, F F, or feed spring, H.

But I claim the employment of a hollow shaft, the rod, C, and the projection, a, with the nut, E, for the purpose of expanding the cutter, B, when the whole is arranged as shown, substantially for the purpose specified.

ICE-PRESERVERS—A. J. Gibson, of Worcester, Mass.: I do not claim the belt, nor do I claim the construction of an inflated life-preserver with separate air chambers; neither do I claim of itself the use of buoyant paddles fitted and attached to the hands as an aid in swimming.

But I claim a life-preserver, composed of a belt, A, arm floats, B B, and buoyant paddles, C C, arranged and connected and furnished with straps or their equivalents to attach it to the person, substantially as described.

[A description of this will be found on page 115.]

PIANOFORTES—H. Goldsmith, of Philadelphia, Pa.: I claim the additional or supplemental sounding board, if, the same being constructed, applied and operating substantially in the manner and for the purpose set forth and described.

I also claim, in combination with the said additional or supplemental sounding board, the contracting of the bridge, b, so as to allow of the treble and tenor strings being all brought more nearly together upon the same, as and for the purpose set forth and described, whilst they are at the same time permitted to retain the usual distances apart on the pin block, as described.

MACHINE FOR CUTTING METALLIC BARS—Saml. Hall, of New York City: I claim the employment of one or more revolving shear blades, fastened to the end or face of a revolving hollow cylinder as described, in combination with a stationary shear blade or blades for the purpose described.

PRINTING PRESS—Charles W. Hawkes, of Boston, Mass.: I claim, first, The cam lever, C, operated by a vibrating platen, substantially in the manner and for the purpose set forth.

Second, I claim securing carriage ways to the adjustable bed, so that when the bed is moved by altering the impression the roller carriages will move with it, and keep the rollers always in a proper position to roll the form evenly, in combination with the roller carriage substantially as described and set forth.

Third, I claim the nipper lever operating in the manner and for the purpose set forth.

Fourth, I claim the trip, in combination with the nipper lever, substantially in the manner and for the purpose specified.

Fifth, I claim the combination and arrangement of mechanism specified, for receiving the cards to be printed, and delivering them after they are printed, substantially as described.

HARVESTERS—Seymour and Leicester Johnson, Jr., of Avon, N. Y.: We claim the arrangement of the outer wheel, C, drive wheel, A, and inner wheel, B, in combination with the adjusting draught pole, E, and movable blocks, v v, the whole being arranged for joint operation, substantially in the manner and for the purpose set forth.

PROPELLERS—Almer Johnson, of Buffalo, N. Y.: I claim constructing propellers, which embody the distinctive features of my invention, substantially as set forth.

LAMPS—Francis LeClair, of New York City: I am aware that shields have been used for protecting the heating flame in some instances; I therefore do not claim the shield itself as new.

But I claim the shield, H, constructed and arranged as described so as to be held in its position by the screw G, and operating between it and the top, a, of the reservoir, A, as set forth.

ARRANGEMENT OF LIFE AND TREASURE BUOY FOR VESSELS—F. D. Lee, of Charleston, S. C.: I claim the arrangement of the buoy provided with the means and appliances set forth, in relation to the chest or safe and indicating buoy, and the decks of the vessel as and for the purposes described.

PLOWS—Joel Lee, of Galesburg, Ill.: I claim the combination and arrangement of the two wheels, E and E', attached to the different sections of the beam swivelling quarter around in opposite directions, and bracing the plow as described when used in the manner and for the purpose set forth.

SEED PLANTERS—Joel Lee, of Galesburg, Ill.: I claim the bevel wheels, D D, constructed, arranged and operated in the manner set forth, when combined with the swivel tube, C, for the purpose described.

STEAM BOILERS—David Matthew, of Philadelphia, Pa.: I claim the arrangement of the draft plates, e and f, in relation to the inclined tubes or flues, D, as and for the purposes set forth.

SEWING MACHINES—Chas. Moore, of Buffalo, N. Y.: I claim the specific mechanism described for forming the loop, namely, the fork, G, crotch, J, lever, I, and stops, P and P 2, arranged and operating in combination in the manner and for the purpose specified.

SECURING HATCHES OF VESSELS—Edw. S. Keyser, of New York City: I claim the securing of ship hatches, and making the joints water tight, by means of the hollow flexible ribs, F, and rubber and metal plates contained within it, which are pressed down over the seams or joints by the screws, d, substantially as set forth.

BEE HIVES—Saml. Kelly, of Washington, D. C.: I claim the sliding frames, F, removable pins, I, and dividing zinc plates, E', in combination with the movable passage ways, and the sliding valve, O, arranged in the manner and for the purposes set forth.

SEWING MACHINES—Wm. H. Lazelle, of New York City: I am well aware of the common use of the cam movement for vibrating the needle arm of sewing machines: I therefore distinctly disclaim the use of a cam for operating the needle arm.

But I claim the disk, B, to which the needle arm is rigidly attached, provided with its bosses or friction surfaces, G G, in combination with a plane faced disk cam, A, arranged and operating in the manner and for the purpose specified.

WINGS OF BOMB LANCES—Nathan Schofield, of Norwich, Conn.: I do not claim the act of connecting guiding wings or other apparatus to a projectile in its discharge.

But I claim the application of one or more springs, S, or I, as a medium for modifying the effects of percussion of a projectile when entering a case of guiding wings placed at the muzzle of a gun, to prevent the violent dynamical cut-off of a rigid and instantaneous concussion thereon by the projectile in its discharge.

PLOWS—R. S. Stenton, of New York City: I claim uniting two or more plows by an intermediate share, in the manner and for the purposes set forth, said share commencing at or near the point of the plow, A, and extending backwards in the direction of the sole of the land side of said plow, and ceasing at or about the angle of the share of said plow until it meets the share of plow, B, all substantially in the manner set forth.

POCKET-BOOK ALARM—William Stoddard, of Lowell, Mass.: I claim one or more hooks, C, or their equivalents, constructed, arranged and operated essentially in the manner and for the purposes set forth.

I also claim the stand, E, or its equivalent, carrying the hook, C, relatively arranged with the spring, H, to allow an elastic but limited movement of this stand for discontinuing the alarm if an extraction of the pocket-book should be attempted by a pickpocket, essentially in the manner and for the purposes set forth.

I claim the thumb piece, K, and finger, L, or their equivalents, for setting or cocking the alarm, arranged and operated essentially in the manner set forth.

POTATO PLANTERS—Stephen H. Strong, of Brunswick, Ohio: I claim the seeding wheel, B, armed with adjusting buckets, D, and checks, E, in combination with the hopper, C, and sliding bottom, R, in the manner and for the purpose set forth.

ICE-BREAKING BOATS—James D. Foster, of Cincinnati, Ohio, and H. C. Foster and John Q. Miller, of Springfield, Ohio: We claim making the breaking bars detachable in the manner and for the purposes set forth.

SHINGLE—Stephen R. Tenney and Asa Bennett, of Hubbardstown, Mass.: We do not broadly claim the preservation of wood by carbonization.

But we claim a carbonized shingle, made substantially as set forth.

[This is described on another page.]

REAPING AND MOWING MACHINES—Henry G. Vanderwerken, of Greenbush, N. Y.: I claim the combination of the stationary and bracing gear, F, with the auxiliary frame, A', main frame, A, driving wheel, C, and pinion, H G, arranged as and for the purposes set forth.

[Full particulars of this invention will be found in another column.]

CONSTRUCTION OF SALT PANS—William S. Worthington, of Newton, N. Y.: I claim the employment within a brine-evaporating pan, of a grating or perforated false bottom, C C, substantially as and for the purpose specified.

[For more information about the above we refer to a notice on another page.]

MACHINE FOR STICKING PINS ON PAPER—Thaddeus Fowler, (assignor to the American Pin Company,) of Waterbury, Conn.: I claim the combination of the plate or form, A, with the slotted form, C when constructed, and made to deposit the pins, substantially as described.

I also claim the combination of the sliding frame, E, with the slotted form, C, when constructed and used as described.

REAPING AND MOWING MACHINES—J. W. Brokaw and Thomas Harding, (assignors to Benjamin H. Warden, John W. Brokaw and Jonathan C. Child,) of Springfield, Ohio: We claim the peculiar method of regulating the hight of the cut, and relieving the draft on the joints of the tongue, by means of the bar, K, in combination with a tongue, I, hinged to the finger bar, C, or front of the main frame of the machine, both being constructed, operated and arranged in relation to each other, in the manner described.

STEERING APPARATUS FOR VESSELS—Charles Weed, (assignor to himself and Stephen R. Crane,) of Boston, Mass.: I claim placing the parallel screws, E and F, one immediately over the other, and connecting them by the gears, H and G, the steering wheel being attached to one of the screws, in the manner substantially as described.

Second, I claim the stationary guide bar, L, as arranged with the grooved nuts, M and N, and bearing blocks, D, as set forth.

SEWING MACHINES—W. C. Watson, (assignor to himself and George H. Wooster,) of New York City: I claim first, The employment of a stationary needle combined in such manner with a reciprocating table or cloth-holder that the protrusion of the needle through the cloth or material being sewed is caused by the movement of the said material, as and for the purpose set forth.

Second, Operating the looper by attaching it to a lever which is carried by the reciprocating table or cloth holder, and which derives motion from the movement of the said table or cloth-holder through an offset on one of its edges, working in contact with the driving shaft, or its equivalent, as described.

Third, The combination of the reciprocating table or cloth-holder, the oscillating feed plate, M, the stationary bar, N, and the spring, q, the whole operating as described, to produce the movement of the cloth, in the direction to produce the seam.

[We have noticed this invention in another portion of our journal.]

RE-ISSUE.

CLEANING TOP CARDS OF CARDING MACHINES—Horace Woodman, of Biddeford, Me.: I claim the method described of protecting the gearing from being injured by working and twisting of the main frame, by mounting the said gearing in an auxiliary metallic frame, constructed and firmly attached to the main frame as described.

DESIGN.

COOK STOVES—Garettson Smith and Henry Brown, of Philadelphia, Pa., (assignors to Wolfe, Moore & Co., of Wrightsville, Pa.)

ADDITIONAL IMPROVEMENT.

PORTABLE CHAIRS—Zebulon Lyford, of Lowell, Mass. Patent dated May 12, 1857: I claim the jointed braces, I, and the strap, P, so constructed and operated on the chair or other article, that by opening it the less will be swung outwards and firmly held by the straightening and holding and setting the joints, in the manner and for the purposes set forth.

I claim the peculiar arrangement and operation of the springs, G, to start or commence folding the braces, I, or for unsetting the joints, substantially in the manner and for the purposes set forth.

The Steam Floating Battery.

It appears to us that there never was a greater or more outrageous *take in*, perpetrated upon any people or government, than that of the incipient grampus battery lying at Hoboken, opposite our venerable Gotham. This monster of the deep was to be built originally for a sum of $586,000, and be capable of protecting the whole harbor of New York, consigning all its proud forts and batteries to oblivion, as useless man-traps, and at the same time, be perfectly competent to sink all the fleets of Christendom, if they dared pop their noses within sight of Sandy Hook; it has cost government $500,000 already, and a committee appointed to examine it have reported that it will take $812,000,000 to complete the operations begun.

This floating battery was commenced in 1842, under a kind of loose understanding with the late R. L. Stevens, who, it is said by his heirs, expended $702,000 upon it, and they now claim $86,717 84, that being the unexpended sum of the government appropriations. As it is now fifteen years since this lazy tong's affair was begun, and as science and art relating to marine engineering and floating batteries have undergone a complete revolution in that period, we suppose the work originally done on this intended floating monster is worse than useless. The best thing that could be done with it is to sell it for old iron and timber, or put it in charge of a committee of "unfinished business," and open it to visitors at the rate of three cents apiece, as a monument of patient labor under liberal appropriations made by that benevolent old gentleman *Uncle Sam*.

A Rich Man.

If happiness consisted in the possession of the good things of this life, which happily it does not, what a happy man the Marquis of Westminster would be! He is the richest man in England, being worth at least $105,000,000, in real estate. He is a member of one of the oldest families in that country, the family name being Grosvenor, which is derived from two old French words signifying "great hunter," or keeper of the hounds, a position occupied by an ancestor of the present Marquis in the time of William the Conqueror, and who went with him in his English invasion. They were created Earls Grosvenor, and at the passing of the Reform bill were made Marquises by Earl Grey. The estates lie chiefly in the counties of Cheshire, Flintshire, and Dorsetshire, in each of which he has a beautiful castle. The one in Cheshire (Eaton Hall) is an elegant building, surrounded by a magnificent park, stocked with choice deer, and within three miles of the ancient and charming city of Chester. It is a great attraction to American sight-seers, to whom the present Marquis allows every facility for seeing his pictures and works of art. He also owns that fashionable portion of London known as Belgravia. It is calculated that the son of Earl Grosvenor, the son of "Westminster's Marquis," will have a yearly income from real estate of at least from five to seven millions of dollars. The philanthropic, energetic and noble) in action as well as name) Lord Robert Grosvenor, Member of the British Parliament for the county of Middlesex, is brother to the Marquis, and is the first of the family who has distinguished himself in the political arena.

Another Great Ship.

A gentleman of Liverpool, England, has proposed to build a ship which will dwarf even the *Leviathan*, to be called *Palmerston's Foresight*. The proposal was first received as something worthy of attention, but it has been found from his model that it would be unfit for any practicable purpose, being almost flat bottomed, with vertical sides, and no visible keel; in fact, it is but a gigantic box that might swim, but would be of no value as a ship. We chronicle this fact to illustrate the mistakes that persons make when undertaking to invent or improve upon anything without first fully understanding what they are about.

Fresh Air in Rooms.

A correspondent of the London *Builder* suggests that in the upper sash of every window there should be inserted a framed pane that will open on hinges; and that this should be compulsory, because in numerous instances the upper sashes of windows are fixed, compelling people to expose themselves to the evil influence of draughts from opening the lower sashes of their windows.

Again at Work.

We are happy to continue announcing the resumption of labor at many factories and machine shops throughout the country. We learn from our exchanges that the extensive ax factory of D. Limmons & Co., at Cohoes, and the Palo Alto rolling mill at Pottsville, have resumed operations. There is little doubt that more will be at work again before the winter sets in.

Patent Office Reports.

To the Hon. J. Holt, Commissioner of Patents, and the Hon. Thomas. R. Whitney, Member of Congress from this city, we are indebted for a number of Patent Office Reports for the year 1856.

U iron is now considerably used for bottoms of water spaces in locomotive and other boilers.

McLarty's Policeman's Club.

MESSRS. EDITORS—The decision of the Commissioner of Patents in this case, as published in your issue of the 5th inst., must commend itself to every reader as an argument of more than ordinary ability, embracing sentiments which cannot fail to enforce admiration and respect. But is the Commissioner's adverse decision to granting a patent on this invention a correct one? In answer, much might be said, both *pro* and *con*. The decision rests exclusively upon the ground of *inutility*, in a patentable point of view, for the law does not look to the degree of utility (1 Mason, 302). But the question of utility, in this case, is restricted to the *moral effect* of such a weapon, and this ground of objection is legally as strong as any other, it having been decided, in the cases of Bedford *vs.* Hunt, and others, that a new invention to be patentable, must be applicable to a beneficial use in society, in contradistinction to an invention injurious to the moral health or good order of society, or in contradistinction to a mischievous invention.

Nominally, the weapon in question is designed to "keep society in order;" and as the law only requires that the invention, to be patentable, *may* be applied to a beneficial use in society, not that it *must* be so restricted, the objection as to its want of utility seems to be met, for, unquestionably, the weapon *might* be used to advantage in a good cause. How many improvements on surgical instruments have been regarded as patentable, including a *fœtus* extractor, that, useful as they are when applied to their legitimate purpose, admit of the most shocking abuse, and are mischievous and immoral in the extreme in the hands of the ignorant or wrong doer? But this, perhaps, is no argument for continuing to patent such questionable devices; and more weight ought, perhaps, to be attached to the comparative moral or beneficial use of them, that is, their use in contradistinction to a mischievous invention. The club, the subject of these remarks, is, undoubtedly, an "ugly customer;" but a patent for it, as an ornament, under the Designs Act, does not appear to have been asked. Generally speaking, the weapon is more calculated to produce mischief than to do good. It is no more a policeman's than a rowdy's club; and protecting it by patent could not make it so, that is, could not legally do so, for, as was decided in the case of Jordan *vs.* the overseers of Dayton, a patent issued by the United States, securing the exclusive right to manufacture and use certain medicines, does not authorize a person to administer them in the character of a practising physician; hence McLarty's club would be a fit subject for "free fights," or anything else. And, supposing him to succeed in getting it patented, he could not use it in the restricted manner he seeks to apply it, unless he be a policeman; or, if he cudgeled his neighbor with it under the belief that the patenting of it entitled him to the privileges of, or constituted him, a policeman, it is to be presumed he would not be long in finding out his mistake. But would the patenting of such a device as this club, by restricting the manufacture, instead of dividing it, favor or retard the use of the instrument by the rowdy? Apparently, a patent would curtail such improper use, but this does not do away with the pernicious or immoral effect of it as a device, *in contradistinction*, and only in contradistinction, to that which would be of public benefit. Also, it may be asked, how far would a patent here tend "to promote science and the useful arts," beyond which field for exercise of the patent laws, the Commissioner, supposing him to be devoid of the humane feelings he so eloquently expresses, has not the *power* to step?

These arguments, *pro.* and *con.*, might be extended, but to do so would be too great an intrusion on your columns. G.

December, 1857.

[Our correspondent does not seem to understand that the famous "club" which has excited so much interest of late, is of no more use in the hands of a rowdy than an ordinary cudgel. Let any one pull the trigger which operates the spurs and endeavor to strike a blow with it while the latter are projecting through the openings made for them, and he will be convenced of the correctness of our opinion. The sole and only object to be gained by the invention of McLarty is to prevent the policeman from being disarmed by ruffians. As a weapon of attack, it is serviceable only as a common club.—EDS.

An Inventor's Trial and Triumph.

Godard, a pupil of Cuvier, had spent his whole life in experimenting upon electricity as a means of distillation, being convinced that the present system leaves the science in its infancy. His apparatus was sent to the *Exposition Universelle* in 1855, and he was treated as a madman by the savans called to examine the success of practical experience against theoretical principle. They defied him, therefore, to explain in writing what he proved in practice; and Godard, accepting the challenge, deliberately sat down to write the development of his system, feeling assured that glory, honor and wealth would be the result. The work was sent up to the *Academie des Sciences*, where it created many a hearty laugh amongst the gentlemen of which that learned body is composed; and, in a short time, one of its members, M. Becquerel, brought back the manuscript to Godard, with the assurance of the approval of the *Academie* with regard to many assertions it contained, but with a peremptory obligation to correct certain errors which had been pointed out by the *seance* held for the purpose. Godard stood aghast—forty-three corrections—in different handwritings—met his gaze, as he ran over the pages of the manuscript. Godard, in a moment of "madness," no doubt, thrust the manuscript into the fire, under the very nose of Becquerel, although the forty-three autographs it contained would have sold at a heavy price, as being those of the wisest, most learned and scientific men of the country! He left the country in disgust after this adventure, and has tried his system in Belgium where, in the last year, he has secured a share of sixty-four thousand francs, according to his stipulation for half the surplus profits arising from the adoption of his system over and above those of the old one. Figures are brutal in their homely logic, and we can understand the "delicacy" which forbids M. Becquerel making the report he is requested by M. Godard to send into the *Academie* upon this vulgar unscientific page torn from his business ledger.

Porosity of Bodies.

All matter being made up of a number of infinitely small particles or molecules, it is evident that there must be intervals or spaces between each, and these spaces are called pores. These pores are excessively small, but have a considerable magnitude in proportion to the molecules themselves.

The porosity of the most dense bodies can be easily demonstrated by means of a very simple experiment. If a piece of wood, or marble, granite, or other compact stone, be immersed in water, and the whole then placed under the receiver of an air pump, and the pressure of the external atmosphere removed, a torrent of bubbles of air will ascend to the surface of the water that have been confined in the pores of the substance.

Iron, by being hammered, is reduced in volume; and the dimensions of all bodies are affected by heat and cold. The facility with which translucent substances are penetrated by the rays of light is an evidence of their extreme porosity. This penetration is not confined to bodies that are usually termed diaphanous, or those that admit light to pass through them, for gold itself, when beaten very thin, will allow a greenish ray to pass through it. All these facts prove the porosity of bodies; and it has even been asserted that gold has more pores than solid parts.

Rosemary.

This name is given to a small shrub which inhabits the rocky hills in the neighborhood of the Mediterranean, and is common to many gardens in Europe and America. It has very narrow green leaves, turned back at the edge, and heavy underneath. The flowers are of a dull leaden blue, or even white. It has been employed in medicine as a cure for headache, in the form of an infusion, and is an ingredient in many pomatums. It is also said to be a component of eau de cologne—the most famous of all artificial scents.

The gray bushes mantled with dew-drops, on the coasts of Italy and France, are said to justify the singular name that has been given to the plant. In the olden time in England, it was customary to give each mourner at a funeral a piece of rosemary, which they immersed in the hot ale drunk on those occasions.

What will a Glass of Water Hold?

It is generally thought that when a vessel is full of water any solid substance immersed in it will cause it to overflow, and such will be the case if the substance is not soluble in the water; but the philosophic truth, that in dissolving a body, you do not increase the volume of the solvent, may be proved by a simple and interesting experiment.

Saturate a certain quantity of water, at a moderate heat, with three ounces of sugar; and when it will no longer receive that, there is room in it for two ounces of salt of tartar, and after that for an ounce and a dram of green vitrol, nearly six drams of niter, the same quantity of sal ammoniac or smelling salts, two drams and a scruple of alum and a dram and a half of borax—when all these are dissolved in it, it will not have increased in volume.

Improved Shingle.

The great destroyer of all things material is oxygen gas, and woody fiber does not escape its powerful action. As it is ever present in the atmosphere, it is always slowly but surely acting on all matter that is exposed to it, and the shingles that roof our houses and public buildings feel its influence more rapidly than we wish, as is evinced by their decay. It is therefore advisable to adopt some method whereby this oxydizing influence may be prevented or hindered and made very slow in its action; and this has been done by S. R. Tenney and Asa Bennett of Hubbardstown, Mass., who have invented and patented a new article of manufacture in the form of a carbonized shingle. It is well known that oxygen is very slow (so much so that it is inappreciable to our senses) in its action on carbon, when in its pure state; and by carbonizing shingles, things exposed to every change of weather and climate, on both sides, they will be protected from decay, and will last as long as, if not longer than, the house whose covering they form. In many uses of timber, the process of carbonizing it has been found economical, and the application of this process to shingles will be found no exception to the general rule. It is also in some measure a method of rendering wood fire-proof, as carbon is a non-conductor of heat, and no paint or oil is required to render them water-proof, thus at once extra expense is avoided. In fact, in whatever light we view this new manufacture, we cannot but regard it as a great advance and one that will be of benefit to the public at large. The patent allows any method of carbonization to be employed, claiming the shingle when carbonized only.

Salt Pans.

A patent has been obtained by W. S. Worthington, of Newtown, L. I., for an improvement in the form of pans for the evaporation of salt. The invention has for its object the separation from the salt, of what is termed the "bitterings," which consist of carbonate of lime and other impurities, which are precipitated from the solution or brine before the crystallization of the salt. The ordinary method is to provide each pan or kettle with a shallow tray or dish of sufficient size to cover the bottom of the pan, and this receives the bitterings as they subside; after they have entirely subsided, this is lifted out of the pan or above the surface of the brine; but this method is liable to the objection that the agitation of the brine, produced by raising the tray, causes the bitterings to be stirred up and a portion of them may be washed into the brine again. This improvement consists in fitting the pan with a movable grating or perforated false bottom, that is supported at a suitable distance from the bottom of the pan, so that the bitterings may fall through it as they are precipitated, and they are allowed to remain during the process of crystallization, and the crystals of salt are received upon the grating, and when all the salt is crystallized, it can be lifted out without disturbing the bitterings, which can then be removed by any convenient method.

Swimming Life Preserver.

The saving of human life, whether from fire or water, and the prevention of accident generally, is a noble and philanthrophic aim, and every one who directs his attention and inventive powers to such a purpose is to be regarded as a benefactor to the human race at large, by those who have any humanity in their hearts. We are happy then to chronicle the invention and patenting of an apparatus for saving life from shipwreck and similar catastrophes, by A. J. Gibson, of Worcester, Mass. This invention consists in making a deep, broad belt of india rubber or other elastic and waterproof material, constructed with air chambers, and having combined with it hollow floats which extend along each arm and expand at the hand to furnish broad paddles or means of propulsion in the water, which aid the person wearing it, in swimming, and by this means gaining any desired place of rest or refuge.

Reaping Machine.

This reaper is different in its driving gear from all other reapers in use. The cutter bar is actuated by the well known planetary system of gearing which, owing to the gear wheels having a rolling motion on their own axis at the same time that they move round with the large propelling wheel, overcomes much of the force of resistance or friction and also imparts a more rapid vibrating motion to the cutter bar without multiplying the gearing, as is commonly necessary, to secure a high speed. The arrangement, besides lessening the friction and increasing the speed of the cutter bar, also firmly braces the frame of the reaper and prevents dirt gathering between, and clogging the operation of the gear wheels. It is the invention of H. G. Vanderwerken, of Greenbush, N. Y.

Sewing Machines.

W. C. Watson, assignor to himself and Geo. Wooster, of this city, has obtained a patent for a new sewing machine, which is a reversion of the ordinary one in all particulars. In this the needle is perfectly stationary, while the table or platform has an up and down motion, and thus the work is performed, and the feed motion, shuttle or loop-maker and other parts, instead of being operated by cams, are moved by striking against fixed parts. The machine is rendered simple in its construction and there being less mechanism, it is less likely to get out of repair.

Mead.

This favorite beverage, that for centuries was the chief libation of northern nations, is made by dissolving one part of honey in three of boiling water, flavoring it with spices, and adding a portion of ground malt, and a piece of toast steeped in yeast, and allowing the whole to ferment. It was sometimes flavored with primrose blossoms, which, by the way, is a little plant that does not grow this side of the Atlantic.

New Inventions.

Improvements in Cotton Spinning.

S. C. Lister and J. Warburton, of Yorkshire, England, have recently secured an American patent on some important improvements in the spinning of yarn from cotton while it is in the wet state. They have discovered that cotton may be advantageously spun from cotton in that state, and it will be stronger and finer thad when spun dry. The cotton is wetted, after having been properly carded with warm water, and then spun between gutta percha or leather rollers, these allowing only a certain quantity of moisture to be retained. This is without doubt a decided advance in cotton spinning, and will give us much finer fabrics in that material than we now possess. The process was patented in this country, Oct. 20, 1857.

Substitute for Linseed Drying Oil.

Joseph W. Harmon, of Elizabethtown, N. J., obtained Letters Patent for a compound to be used as above, on the 29th of September, 1857. He takes the residuum of the stills of candle factories as the important basis of his compound, which consists of certain products from palm oil, lard, tallow, or other greasy matters remaining after the stearic acid has been taken off. To one gallon of this residuum is added one gallon more or less of rosin oil, and these are melted together into one homogeneous mass, then three-quarters of a pound of litharge is added, and one pound and a half of umber, together with three pounds fresh slaked lime, and three pounds of oil cake. This whole mass must be carefully mixed and boiled properly, and, after cooling, it is brought to a proper consistency by spirits of turpentine, when a good substitute for linseed drying oil is produced, the proportions varying of course according to circumstances.

To Prevent Railroad Cars from Running off the Track.

Two weeks since, we translated and published an article from an Austrian journal upon the above subject. It has elicited a good deal of attention, and many devices have been proposed to us to obviate the difficulty. One suggests a separate axle for each wheel; another proposes to divide the axle at some point, and sustain the ends in suitable boxes, so that each wheel shall have a separate action; another proposes to secure the wheels to the axle by friction, so as to allow them to move with the axle, except when turning curves. We could instance other modifications, but do not regard them as important. Our present purpose is to state to our correspondents that these devices are old and well-known, and that patents already exist upon them. They are not, however, for prudential reasons, in use upon any of our railroads. In copying the article referred to, we did not intend to convey the impression that the ideas were new; our object was to show what was thought on this subject in Austria.

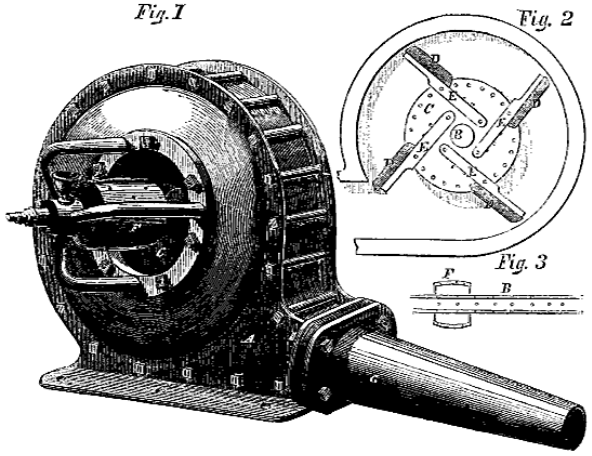
Improved Suction Blower.

This invention consists in making the ordinary blower with certain provisions for adjusting and screwing the arms of the wings to any desired angle, and for increasing the supply of air to the fan blower, and for keeping the journals and boxes cool, and also increasing the adhesion of the driving belt to the drum or pulley.

In the accompanying engravings, Fig. 1 is a perspective view of the blower, and Fig. 2 a section of the fans and center plate, and Fig. 3 a section of the driving shaft, which is hollow and perforated, as seen in the engraving. To obtain a regular, strong and continuous blast of air through the tweers of a furnace, or in any place in which a blast may be necessary, is often a difficulty, from the fact that the fans are not always in the most advantageous position, but where, as in this blower, the fans can be adjusted to suit varying circumstances, these results are almost sure to be obtained.

A is the casing of the blower, which is constructed of the usual form; B is the shaft, which is made hollow with open ends; C is a disc or circle plate keyed firmly to the shaft, for the purpose of attaching the arms of the wings, D D. This circle plate has a number of holes arranged in a concentric circle near its circumference, and a series of holes arranged as indicated in Fig. 2, in arcs described from the holes in the concentric circle. These holes are for the purpose of receiving bolts for securing the arms, E E, of the wings, D. By moving the bolts to the different holes in the concentric circle, the arms are adjusted as tangents to the different circles, and to suit the different holes in the arcs described.

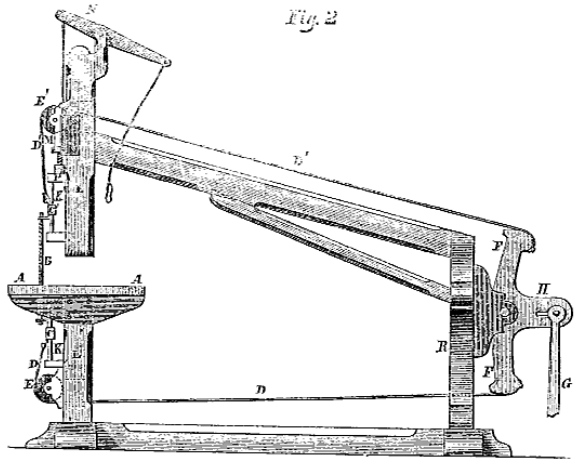
POLLOCK'S SUCTION BLOWER.



This variation is important, in order that the wings may be set to that angle which will be most effectual in forcing the blast. The arms, E E, are made as shown in Fig. 2, and bolted on the circle plate, C, the wings are secured to the same by bolts. The hollow shaft, B, has apertures in its sides within the blower casing, and by the action of the fan air is drawn in at the open ends of the shaft, and through these apertures into the casing. By this means the journals and boxes are kept constantly cool; the pulley, F, which receives the driving belt, is made hollow with closed ends; its face is perforated all over and apertures made in the shaft within it, the air by this means is displaced between the face of the pulley and the belt by being drawn into the blower, by which means the adhesion of the driving belt to the pulley is greatly increased.

This blower was patented June 19, 1855, by David and J. R. Pollock, and for further information, address them at Lancaster, Pa. (Box 169.)

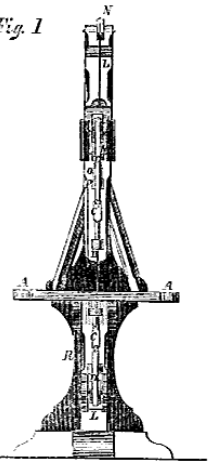
LAWTON'S MODE OF OPERATING SCROLL SAWS.



The cunning hand and artistic eye of the carver are gradually being replaced by the machinery of the scroll saw, and patterns carved in wood more beautiful and elegant in their artistic and mathematical proportions than are seen in any of the works of the old Flemish carvers, are daily being produced by the refined mechanism of the new American artisan. Such are the changes time produces, and science unfolds, making articles of luxury and taste cheap enough to decorate the loved home of the humble, where they may be admired as highly as ever they were in the palaces of the great. The scroll saw is, as its name implies, especially designed for cutting curves in thin wood for the purposes of decoration, such as the open work of pianos and the like. The pattern is drawn on the wood, and the wood itself guided by the hand of the operative to be cut out by the fine ribbon-like saw. Many patents have been granted for improvements in these machines, always more or less adding to their utility.

The invention we are about to describe consists in straining the saw by means of an upper and lower belt, both connected with a double lever by which the saw is operated, thus allowing ample space around the saw for guiding and handling all descriptions of work.

Fig. 1 is an end, and Fig. 2 a side elevation of the invention, and similar letters refer to similar parts in each. A A is the platform on which the work is placed, and B is the saw blade, usually made very narrow and attached to the buckles, C C′, by means of catch pins or pinch screws. To the buckles, C and C′, are also fastened the belts, D D and D′ D′, which pass around the pullies, E and E′, back to the double-armed lever, F F. The lever, F F, being operated by the pitman, G, attached to the arm, H, and drawing alternately the bands, D D and D′ D′, operates the saw, B. To keep the saw in proper position, the



buckles, C and C′, are caused to slide upon the square guide-posts, L L. For the purpose of straining the saw, the upper pulley, B, is attached to the slides, M, which is raised and lowered so as to tighten or slacken the belts by the lever, N, and when the lever is sufficiently elevated, the adjustable screw block, O, is placed between the slides, M, and stud or bracket, P, and by this means any degree of tension that may be required can be given to the saw. When the apparatus is not in operation, the block, O, should be removed so as to slack up the saw-blade and belts. The advantages of this machine are obvious, as the machine is free from any obstruction to its working, and the distance from B to the back post at R, may be regulated at pleasure; the parts being very light, a great speed may safely be obtained, and the inertia is very trifling.

It is the invention of John L. Lawton, of Baltimore, Md., who will furnish any further information. Letters Patent were secured by him on the 3d of November, 1857.

Novel Inkstand.

We have received from the manufacturers, Messrs. Cook & Merritt, of No. 18 Beekman st., New York, an india rubber inkstand, of a simple and useful form. The receptacle for the ink is made entirely of rubber, having a glass funnel inserted in the top, into which the pen is dipped. By giving a gentle pressure to the ink receptacle, and removing it *quickly*, a fresh supply is brought into the funnel, and by the same pressure, and that removed *gradually*, the ink flows back into the inkstand. It is a most ingenious contrivance.

Hand Looms Wanted.

A Mr. Rockwell, of Rocky Mount, N. C., wishes to obtain a good hand-loom, that works by simply moving the lay or batten backwards and forwards. He also wishes to purchase the right to make and sell such looms. Who can supply him? We have seen a hand-loom which operated the treddles, lay, and picker-staff by turning a crank, but never one that operated by simply moving the lay.

THE LEVIATHAN.—Another unsuccessful attempt has been made to launch this immense ship. The engineer, Mr. Brunel, is evidently puzzled to know how to grapple this monster with advantage.

Scientific American.

NEW YORK, DECEMBER 19, 1857.

The Secretary of the Interior and the Patent Office.

The report of the Secretary of the Interior, recently presented to Congress, contains some interesting information in relation to the Patent Office and its affairs. We learn by it that from the 1st of January to the 30th of September of the present year, 4095 applications for patents were received and 820 caveats filed. During the same period 2066 patents were issued, and 2287 applications rejected. The income of the Office for the three quarters of the year amounted to $161,415 97; the expenditures were $163,942 04—an excess over the receipts of $2,526,07. The Secretary states that it was the policy of the law under which the Patent Office was established, that it should be a self-sustaining bureau. This policy he considers sound, and to accomplish this desirable object he recommends that the portion of fees (twenty dollars) now returnable by law to rejected applicants be hereafter retained. The amount returned on rejected cases, during the period above-named, was $27,939 99. This proposed change in our patent law we fully discussed in a former volume, and we need not now recapitulate our views at length. We have thought, and still think, that thirty dollars is too large a fee for the examination of most applications by the Office, and we have recommended that $20 should be the general fee required of each applicant, the whole to be retained if the case is rejected, but ten dollars extra to be paid if the patent issues. If such a simple and reasonable amendment of the law had been in force during the period of the year mentioned, instead of the expenditure of the Office exceeding the income, the excess would have been $11,443 92 in favor of the self-sustaining advocated by the Secretary.

It is generally well known that the Patent Office has been placed under the Department of the Secretary of the Interior, yet there is an old independent regulation still in existence, which allows the Commissioner of Patents to present his annual report direct to Congress and not through any other department. He recommends that this practice be abolished and the law changed so as to place the P. O. like other subordinate offices under the complete control of the head of the Interior Department. Although the Patent Office could not, in our judgment, be placed under more judicious control than the present Secretary of the Interior, yet we have entertained the opinion, from the very first establishment of this department, that the Patent Office should be an independent and distinct branch by itself with the Commissioner as its head. If this were the case, we think, it would be better for the interests of inventors and the country at large. We should regret exceedingly to see it any more subordinate than it is at present.

The Secretary recommends that the patent fee ($500) required from a subject of Great Britain be reduced to one hundred dollars. He states that the present high fee charged by our government to subjects of the British government was adopted in the law of 1836, apparently as a measure of retaliation in consequence of the large fee of £100 formerly charged in England; but as that government has reduced its fees, he considers we should respond to this liberal policy. To the credit of the British government be it spoken, that although it formerly charged a very high fee, yet it never made or attempted to make any invidious distinctions between natives of different countries. All were placed on the same democratic platform in regard to patent fees; the citizen of London and the citizen of New York, then as now, paying the same amount into the Treasury.

The Secretary of the Interior also recommends that the law allowing rejected applicants an appeal from the decision of the Commissioner, to the District Court of Columbia, be repealed. He considers this feature of the code an anomaly in our legislation, confounding the judical and executive departments. He says:

"This law should be repealed and some other system substituted, which will put this Office in a position of independence in its executive action, and at the same time secure all the rights of inventors. The most feasible plan yet suggested to this effect is, in my judgment, to authorize the creation of a permanent Board of Review, to consist of three members selected from the Examiners of the Office, and who shall be known as 'Examiners-in-Chief.' This Board shall be charged with the duty of hearing and determining upon all appeals from the judgment of the primary Examiners, except in every case of appeal where any of these may have formed and expressed an opinion; in which case another Examiner may be substituted to act in his stead, and then their judgment and action will be subject to the supervision and review of the Commissioner." For this alteration in the law, the Secretary presents the following reasons which appear to be sound and worthy of general approval:

"This alteration of the existing law, must necessarily increase the efficiency of the Office, and at the same time secure uniformity and certainty in its rules of action. And while the inventor will be saved from vexatious delays, and heavy costs of judge and counsel, he must feel satisfied that in the provision made for a thorough examination of his application by the Examiners in the first instance, then by the Board of Examiners-in-Chief, and lastly by the Commissioner, he has secured to him the most ample opportunity for the establishment of his rights."

The Secretary of the Interior is no doubt a friend to inventors, and desires to see this useful and honorable class of our citizens protected in all their rights. He alludes to their worth, their genius, and the benefit they have conferred upon our common country, and he invokes Congress to regard their wants and interests. The whole of his report, in relation to the affairs of the Patent Office, is couched in language which evinces the best feelings towards our inventors; and it finishes up with the welcome intelligence, that the objects of curiosity and collections of exploring expeditions, which have so long usurped the main hall of the Patent Office building, will all be removed to the Smithsonian Institution at the close of the present year.

We regret very much that the President did not in some form recognize inventors in his message, as he is very familiar with the progress of mechanical science in our country.

Howell's Homogenous Metal.

This is the name given to a certain kind of iron manufactured in Liverpool, Eng., and so termed after its inventor, Mr. Howell. Very extravagant reports have been propagated regarding its superiority over all other kinds of iron for strength, endurance, and every other quality. In the early part of the present year, a paper was read on the subject before the Liverpool Polytechnic Institution, by Maxwell Scott, and we were so struck by the merits claimed for it by him, as published in foreign scientific journals, that we resolved to watch for every new item of information relating to it, as we were impressed with the feeling that it was either one of the most valuable discoveries of the age, or was lauded far beyond its deserts. At the time referred to, the composition of this metal was not given by Mr. Scott; but in answer to some questions put to him on this point, he promised to read another paper at some future period, in which he would give further explanations. This second paper he has recently read before the Institution, but the statements which he made in it, as reported in the London *Engineer*, do not give us that satisfaction we desired to obtain respecting its manufacture and true character; nevertheless, the substance of what he is reported to have said, deserves to be placed before our readers, on account of the importance of iron in any of its applications and improvements.

Mr. Scott asserted that this metal has twice the strength of the best plate iron used in making steam boilers, and is thus better adapted for such purposes, because a far higher pressure of steam can, with more safety, be carried in boilers made of it; or, on the other hand, thinner boiler plate may be employed, and a more rapid generation of steam effected. On one occasion an experiment was made with a boiler of this metal, having an internal flue one-eighth of an inch thick, to ascertain the quantity of water evaporated to the amount of fuel used, and it was found that ten gallons (60 lbs.) at 212° Fah., were evaporated with 4 lbs. of coal, or 15 lbs. of water to one of coal. This was, certainly, a very favorable experiment regarding its qualities for steam generators, but the quantity of water evaporated is so large that we believe there must have been some mistake committed, as the *theoretical* value of 1 lb. of the best Newcastle coal, for evaporation, is only 14 lbs. of water. Mr. Scott also asserted that it withstood the action of intense heat and salt water much better than ordinary boiler iron. A steamboat running on the river Mersey was fitted with a plate of the homogenous metal on its boiler at the side of the furnace, opposite a similar plate of the common boiler iron, and while the latter was nearly destroyed in six months by the intense heat and corrosion, the former was about as sound as when first put on.

Specimens of this metal, in various forms, were exhibited at the meeting, and a rod of it, three-eighths of an inch thick, was tied into a knot while in a cold state. In answer to several questions as to the process of its manufacture, the responses, we conceive, as reported, were neither free nor full. Mr. Howell, the inventor, who was present, said "It was a pure iron, made direct from the bar. It was melted precisely the same way as steel, in crucibles, to free it from the earthy basis of iron, and was afterwards rolled out. It had the hardness of steel and the ductility of copper, and was, in fact, steel without its brittleness. A 20-horse power boiler, of Low Moor iron, would weigh four tuns; one of this homogenous metal only two."

The superior anti-corrosive quality claimed for this metal over common boiler iron may be questioned upon the statement of its inventor. He asserted that it was a pure, or, at least, the purest iron yet obtained in the general process of manufacturing. Now it is well known that the purer the iron, the more liable is it to rapid corrosion, owing to the intense affinity which it has for oxygen. This homogenous metal, therefore, if a purer iron than that of common boiler plate, should be more liable to rapid oxydation. If, by experiment, it has been found superior to common iron in withstanding the action of salt water and intense heat, it must be owing to some other quality which it possesses, than its purity as *a brand* of iron.

We really hope that this metal does possess all the good qualities claimed for it. If it can be furnished as cheap as the best wrought iron, is twice its strength, and as capable of being rolled and forged, it will be the means of giving the greatest impetus to engineering and the mechanic arts of any other invention of the present century. We have only to conceive that all kinds of machinery now constructed of wrought iron may be reduced to one-half their weight, to form a very good idea of what may be effected by this metal, if all is true which has been uttered respecting its qualities.

New Pencil Sharpener.

J. W. Strange & Co., of Bangor, Me., manufacture a pencil sharpener with the additional improvement of an orifice in the handle for sharpening the point of the lead. It has some pretensions to ornament, and is a useful appendage to the office-desk. It was patented September 22, 1857.

Photographs for Wood Engraving.

All wood engravings have hitherto been first drawn by hand on wooden blocks for the engraver, who cuts them for common letter-press printing. This art involves great skill, and a peculiar natural taste on the part of the artist, and requires considerable time to execute the most simple figures. When photography was first discovered in England, its application to the production of pictures on wooden blocks was very early suggested and essayed, as stated on page 96 of our present volume; but although some blocks had been thus prepared and used in printing, the attempts to render the application truly useful failed of entire success. The reason of this, we have been informed, was owing to the defective processes pursued to produce such pictures on the blocks. By one method they (the blocks) were first prepared with a solution of common salt, then they were dipped into a bath of nitrate of silver to render them sensitive. This process injured the color and fibre of the wood, rendering it very brittle and unfit for printing more than a very few copies. Another method consisted in protecting the surface of the wood from the action of the nitrate of silver by a coating of albumen, rendered sensitive afterwards by the nitrate; but it was found that engravers could not cut clear lines, and consequently could not execute good engravings on such prepared surfaces. To obviate these evils, and to produce good photographic pictures on wooden blocks, was the object of the invention for which a patent was granted to R. Price, of Worcester, Mass., as noticed by us on page 390 of our last volume. He has never set up the claim of being the first person who applied photography to wood for engraving purposes, but that his process is the best yet discovered, and that good engravings on wood can be executed from it.

We will describe his process, so that there can be no mistake hereafter, either as to what it is, or its originality. It simply "consists in preparing the wooden blocks first of all with a thin solution of asphaltum or bitumen, ether, and lampblack, rubbed into the pores of the wood." This ethereal solution of asphalt is put on the surface of the block with a rag, brush or sponge, and then some fine lampblack is also rubbed in dry; the surface of the block is afterwards polished on a cushion, when it acquires a smooth, jet black, glossy appearance. After this, it is treated by the common photographic process; namely, coated with collodion rendered sensitive by nitrate of silver, then put into the camera, the picture taken, then fixed and dried in the usual manner. The whole of this process—preparing the block and taking the picture—does not occupy more than ten minutes of time, as we had an opportunity of witnessing personally, a few days since, at the establishment of Messrs. Brightly, Waters & Co., No. 90 Fulton street, this city. Wooden blocks, prepared as described, appear to be well adapted for engravings, several of which we examined in different stages. Those finished were clear in the outline, and the perspective was very correct.

Revival of Business.

We continue to hear of cheering improvements in business from various quarters. The Worcester (Mass.) *Palladium* says that the several firms of enterprising manufacturers of machinists' tools, at the Junction Shop, in that city, have started their works on full time. They have been lying idle several weeks. The extensive iron works of Charles Washburn & Son, of Quinsigamond, have been put in operation, and the mills at Clinton, Saundersville, Wilkinsonville, and many other localities have started or are about to start their works, with a prospect of running on full time. The shoe interest has also brightened up in many places, and establishments which have long been idle are beginning to resound with the busy hum and click of industry. May we not confidently hope, then, that better prospects are dawning upon all the industrial pursuits?

The Sense of Sound.

The human ear is so constructed that it may be truly called a reservoir of sound, in which the vibrations occasioned by any disturbance of atmospheric equilibrium are collected and arranged into a definite and appreciable sound. Next to the eye, the ear of all those animals whose higher organization places them among the hearing beings, is one of the grand evidences of design in their construction and development, and by its means, we human beings have been able to collect many highly interesting facts in acoustics, or the science of sound. For example, we are able to determine that sound travels with a wave-like motion through the air, and that its intensity, like that of attraction, diminishes in the inverse ratio of the squares of the distances of the sounding body, when opposing currents of air or other obstacles do not interfere. Again, we have been able to determine that sound travels at the rate of 1044 feet per second, at a temperature of 556° Fah.: or according to recent experiments in Holland, the rate is 1120 feet per second at the same temperature. Adopting the latter as the true rate a noise in the body of the sun would be about fifteen years before it would be heard on this earth, being that long in traveling the distance that is traveled by light in eight minutes.

A whisper, as far as it goes, travels as fast as the report of a cannon, and the strength of sound is greatest in cold and dense air, and least in warm and rarified. Capt. Parry, the Arctic explorer, when in latitude 74° 30′ N., heard people conversing in an ordinary tone of voice at a distance of one mile, and each of our own winter's experiences tend to prove the same fact. The media through which it travels greatly affects its velocity: thus through water it passes at the rate of 4900 feet per second; through cast iron, 11,090; and through wood from 4636 to 17,000, according to its density.

Distances may easily be measured by sound, by multiplying the time in seconds by the rate at which it travels; thus, for example, if, after observing a flash of lightning, it was twelve seconds before the thunder was heard, what was the distance of the cloud from which it came? We multiply the time by the rate and the answer is two and three-sevenths of a mile. Music is an harmonious arrangement of vibrations, and the different notes are produced by the number of vibrations in a given length of time, and any sounds which occur continuously or at regular intervals, may be made to produce music; as for example, the force of impact on the wires of the pianoforte causes their vibration and consequent music; the power of the wind in the æolian harp, the force of steam in the calliope, and the escapement of condensed air, or a stream of air at a greater pressure than ordinary in all so called wind instruments. In playing any instrument whatever as much depends on the power of feeling and expression of the performer as on the merits of the piece, and this power of expression can only be attained by great practice or a highly cultivated ear.

While on the subject of sound we cannot avoid some mention of bells, which are cast in metal to produce a large, harmonious sound. They were invented by Paulinus, an Italian bishop, about the year 400, and the largest at present in existence is the great bell of Moscow, weighing some 432,000 lbs., the largest in Britain is in the Cathedral of Exeter, called Great Tom, which weighs 17,472 lbs. In this country we have no very large bells, with the exception of one at Montreal; as the American people will go to places of worship, when they feel it is their duty to do so, without being summoned by a great noise or peal of bells.

Adulterated Medicines.

Although there is a law providing for the examination, by experts, of imported medicines, in order to prevent imposition in them coming from abroad, yet it is no better than a dead letter to the public, because there is no protection against their adulteration after importation. That it is a common practice to adulterate medicines in New York (as was found to be the case by a special commission in London a few years since) we think there can be no room left for honest doubt, judging from a paper read on the 3d inst. before the New York Academy of Medicine by Dr. Rotton. He had examined various fluid extracts prepared at different manufactories. In trials made with *veratrum viride* (of which a dose should be five drops) it was given in doses of thirty drops without producing any effect. On analysis, very little of the active principle of the plant was found in it. An extract of jalap, which should have contained ninety-six grains of the active principle, only possessed five grains; while another sample examined contained none at all. An extract of *cannbis indicus* (a dose of which should be from ten to twenty drops) was so very powerful that the doctor took half an ounce himself, and gave three ounces to a patient, with as much effect as if he had taken and given so much lager beer! Various other extracts were examined, and found to be on a par with those mentioned.

It is our opinion that doctors who prescribe medicines for patients should be responsible for their qualities. As medicines are always sold at very high prices by druggists, either the honesty of their manufacturers or sellers must be impugned when the medicines sold are either devoid of the amount of active principle which they should contain, or the principle altogether. Adulteration of medicines can only be detected by those skilled in the art; those who purchase, generally, can neither judge of their good or bad qualities by inspection. It is, therefore, the duty, we think of the New York Academy of Medicine to detect and expose the common frauds and impositions in medicines.

Hair Specifics.

The number of hair specifics which are now vended under the astounding names of "Walpene," "Tricopherous," &c., is really wonderful. It is professed for them that they restore the hair, (curing baldness,) prevent it falling out, give it a beautifully soft and glossy appearance, and either kill or cure all the ills that hair "is *heir* to." Judging from the number of establishments where such articles are manufactured, the quantity sold must be prodigious; and judging from the prices at which they are sold, the profits arising from them cannot be small. That some of these lotions are good in their way, there can be no room to doubt; but the merits of the best are greatly exaggerated by those who sell them. We will give a few recipes for making such specifics, so that those of our readers who wish to use them can make the preparations themselves:—

No. 1.—Take eau de cologne two ounces, tincture of cantharides, half an ounce, and add twenty drops of the oil of lavender.

No. 2.—Take vinegar of cantharides, half an ounce, eau de cologne and rose water, each half an ounce.

No. 3.—Take an ounce of castor oil, mix it thoroughly with a pint of alcohol, and add half an ounce of the tincture of cantharides.

No. 4.—Sulphuric ether, one ounce, tincture of cantharides, one ounce, olive oil, one ounce, alcohol, one pint.

These four recipes are sufficient. The first two are from the work of Erasmus Wilson, F.R.S., the author of an able treatise on cutaneous diseases. The last two recipes are followed by persons who manufacture the article for sale, and are better than the first two; they are capable of making excellent Tricopherous, both for keeping the head clean, preventing the hair falling out, and, in some cases, curing partial baldness. In using them, the head should be brushed smartly with a hard hair-brush, the lotion then applied with a piece of sponge, the head brushed again, and a silk night-cap put on. The best period to apply it is just before going to bed, but it may also be used at any time of the day.

The philosophy of such hair specifics consists in considering decay in the growth of hair to be due to an absence of vigorous action in the nerves of the scalp. The tincture of cantharides excites action in these nerves, and its office is to restore vigor to the hair, preventing its falling out, and promoting its growth. The oil keeps the skin soft, and the alcohol tends to dissolve the scurf and keep the scalp clean. The alcohol requires to be 95 per cent proof, or it will not dissolve the oil. The tincture of cantharides can be purchased at the druggists'; but it can be made one-fourth cheaper by steeping one ounce of Spanish flies in six ounces of alcohol for twenty-four hours. Any perfume may be used, but the oil of lavender is about the cheapest.

The Tricopherous can be colored a beautiful crimson by steeping a few chips of alkanet root in it, or colored yellow by a little bichromate of potash, but the color adds nothing to the quality of the lotion. An alkaline solution of honey is recommended by some for restoring the hair in cases of baldness, and a vinegar extract of horse-radish as a substitute for cantharides is described in one of Erasmus Wilson's specifics; but those we have given are as good as any, and can be made at a comparatively small cost.

Combination Billiard Cushion.

The patent granted this week to M. Phelan and H. W. Collender, of this city, is for an improved mode of carrying out a principle in billiard cushions covered by a former patent secured in 1856 by Mr. Phelan, and illustrated in the Scientific American, Vol. XI., page 116.

The present improvement consists simply in the combination of two rubbers of different degrees of density, the hardest rubber being the face, and the softest the foundation of the cushion. The advantage in using a denser rubber as a facing instead of a cork, steel or whalebone facing is this:—Rubber belting is very cheap and may be found in the market in the proper form for use, and it possesses within itself a property whereby it and the rubber foundation can readily be united. It is also superior to a steel strip or whalebone, because it presents a denser surface of such a nature as will avoid the disagreeable bang of the steel or whalebone strip, and which will "grip" the ball so as not to injure its correct reflection and yet give greater effect to the "twisting shots." It likewise prevents the ball sliding off at an incorrect angle when played at a very obtuse angle against the cushion.

As Mr. Phelan has the reputation of being the best billiard player in the United States and understands the requirements of the table, his improvement must commend itself to those of the public who play this almost national game.

Fig Trees.

These small trees have broad leaves, and grow in the south of Europe, and similar latitudes in Asia; they will also thrive in many parts of our own continent. The fruit is not of the same nature as the apple, the orange, and other fleshy seed vessels, but is a hollow receptacle, containing a great number of small flowers, the ripe fruit of which is the seed, as it is wrongly called, that is imbedded in the pulp.

It is remarkable that the fig tree, although producing such agreeable fruit, is, in some degree, poisonous, its milky juice being acrid to the taste, and of the same nature, though less powerful, as that of the poisonous Indian fig tree, called so because of its venomous qualities. The genus *ficus*, to which the fig tree belongs, is of considerable extent, and its species provide some of the most gorgeous objects in the vegetable kingdom. In tropical countries, many varieties give enoutchouc of an excellent quality, especially those of Java. The banyan tree—so celebrated for the large extent to which a single one spreads out, and which carries an enormous canopy of branches and leaves upon columnar trunks, provided for the purpose as the tree advances in diameter—is also a kind of fig.

Poisons and their Antidotes.

Accidental poisoning although not very frequent, occurs sufficiently often to cause it to be a matter of importance that each individual should know the antidote or counteracting influence to be applied when any case comes under notice. There is often no time to send for a medical man, and many human lives have been lost while waiting for the doctor.

Oxalic acid, or salt of lemons, is often mistaken for Epsom salts, and causes death in a short time; a safe antidote for this and all other acids is magnesia made into a paste with water, or a solution of common soap. In the case of prussic acid, however, laurel water, or chloride of lime, and bi-chloride of iron are effectual remedies. Tartar emetic is another poison often taken designedly or in mistake, and large quantities of warm water should be given to induce vomiting, and powdered Peruvian bark.

For arsenic, the hydrated oxyd of iron is the only cure, in a dose thirty times greater than that of the poison, while for poisoning by lead in any form, sulphate of magnesia, potash and soda are good, and phosphate of soda is a safe antidote. Mercury or corrosive sublimate is counteracted by the white of eggs or milk, and for sulphate of zinc or white vitriol, cream, butter and chalk will act as preventives. For poisoning by copper, the white of eggs, iron filings prusiate of potash will stay its action, and for sulphuretted hydrogen and carbonic acid, free exposure to the air and a leech or two applied on the head have proved successful.

For all other poisons, such as fungi, poisonous mushrooms, laudanum, strychnine, nux vomica and vegetables generally, it is always safe to administer an emetic.

Sugar of Milk.

This curious substance is an important constituent of milk and is obtained in large quantities by evaporating whey to a sirupy state and purifying the lactin or sugar of milk, as it slowly crystallizes out, by animal charcoal It is composed of carbon, hydrogen and oxygen in the proportion of twenty-four equivalent parts of each. Its crystals are very hard and have a gritty feel when placed between the teeth; the sweet taste is very feeble. Milk sugar forms several compounds with oxyd of lead, and by treating with mineral acids will yield grape sugar. It is not directly fermentable but can be made, under particular circumstances, to furnish alcohol. The principal use to which it is applied is in medicine, for forming a solid basis to receive minute medicated solutions.

Heavy Money Operations.—Many of our readers may not be aware of the immense sums of money which change hands ofttimes by single transactions. On the 21st of November, the American banking-house of George Peabody & Co., in London, received from the Bank of England $4,000,000; the firm of Overend, Gurney & Co. also received from the same bank $4,000,000. A few days since, the Bank of America, in this city, paid a single check drawn by the trustee of the North American Trust Co., for $1,320,000.

American Tea a Failure.—Those who have made the experiment of raising tea in this country say:—The plant will grow well enough, but wages are too high. We cannot afford to pick, roll up, and dry any sort of leaves here for half a dollar a pound. In China, where a man is hired for one dollar a month, and boards himself, it may be done.

Specie Payments.—The banks of this city resumed specie payments in full on Saturday, Dec. 12. They have been in a state of suspense only sixty days, and opened their vaults with over $25,000,000 in coin.

Chapped Hands.—The application of raw linseed oil at night and morning is said to be an effectual cure and preventive of this troublesome complaint.

Correspondents

J. T., of Pa.—There are in use in this city, and others, omnibus and car registers for indicating the number of passengers that get in and out, as the case may be. They operate on substantially the same plan as your indicator for movable freight. We cannot, under these circumstances, advise you to apply for a patent.

J. G. C. & Co., Miss.—Your inquiry for a good fan blower is answered by the engraving of Messrs. Pollock in another column.

J. F., of Ill.—Your idea of attaching a spirit level to a square is very old. The same plan has been submitted to us as often as once a month for the last ten years, with the inquiry, "is it patentable?"

A. N. N., of Ind.—Howe originally claimed to be the inventor of a needle with an eye near the point, and others have set up similar claims; but we believe making the eye near the point of a needle was done before any person now living existed. Howe claims the combination of an eye-pointed needle with a shuttle, and his patent has been sustained, and is no doubt valid.

G. C. D., of N. J.—You will find full particulars on the subject of American watchmaking in an article on that subject in No. 1 of the present volume of the Sci. Am.

M. W. H., of Ind.—The sample of ore you have sent us, we think, from the slight examination we have made of it, may contain a little silver or lead, but we should advise you to get it analyzed by some respectable analytical chemist in your own neighborhood. As soon as we know the result of your application on the cider mill, we shall advise you by letter.

H. B., of Pa.—Your inquiries concerning a loom possessing all the peculiarities you name we cannot answer.

D. W., of Md., asks the following questions:—First, Are not cannon bored under water? Second, Are there any subterranean streets, or any thing of that nature in New York? Third, Is Henry Ward Beecher presiding minister of Trinity Church? Answers—Cannon are bored in, not under, water. There are no subterranean streets in New York. Mr. Beecher is pastor of a Congregationalist church in Brooklyn.

J. A., of O.—We are in receipt of your remittance of $12 for engraving your machine for cutting corn stubble. The description and engraving will be published in about two weeks.

C. P. S., of O.—The plan you suggest of paying out the Atlantic cable through the bottom of the ship, and nearly amidship, has been suggested a number of times. The idea seems to be practicable. Your mode of constructing a "well" for the purpose may be new. We shall be glad to examine your sketches.

F. B. C., of ——Such engravings as will answer our purpose to illustrate your invention in our paper will cost you $30. The cuts we will send you as soon as we have done using them.

A. B. P., of Baltimore.—In our last paper you will find a description of your mode of constructing a false deck, to be used as a raft in case of shipwreck. We would recommend to your careful perusal the article referred to, under the heading "Steamship Central America." The same idea has been suggested to us many times.

M. M. & Sons, of Pa.—Your plan for operating window blinds from the outside by means of a rack and pinion, is not new or patentable. Some six or eight years ago a sanguine inventor of our acquaintance placed upon our office blinds precisely the same kind of a device.

R. H. Jones, of Mount Pleasant, Ala., wishes estimates for a grist mill capable of grinding 150 bushels of corn per day, and of a steam engine and boiler of sufficient capacity to drive the mill.

W. H. G., of Mass.—The claim of Reuben Daniels for cutting fuel from brushwood reads as follows:—"I claim the granular fuel produced from brushwood and twigs by cutting the same into lengths equal to its average diameter as herein described, as a new article of manufacture." The question for you to decide is, Was the cutting of twigs and brushwood into short pieces, to be used as kindling, a new article of manufacture at the time it was granted in 1855, as the claim sets forth? If it was, the patent will stand. The product is what is patented, not the machine for manufacturing it, as we are aware.

H. S., of Ohio.—If you have discovered a sovereign remedy for the potato rot, you are entitled to a reward from some source, for so important a discovery. We cannot inform you whether the invention is the subject of a patent or not, without knowing in what your discovery consists. Send us an account of your method of accomplishing such a wonderful result, and we can then tell whether you can protect it by a patent. A copyright would be no protection to you either in this country or abroad.

C. B. P., of L. I.—Before you attempt to illustrate, by algebraic demonstration, that perpetual motion can be obtained, we advise you to take an easier problem, and demonstrate what the precise result would be of an irresistible force coming in contact with an immovable body.

I. S., of Va., and R. H., of Ind.—Your plan for connecting car axles in the center, so as to admit of each wheel acting independent, is not new. A similar device was illustrated in our columns years ago.

J. B., of Texas.—The improvement you describe in Massey's indicator, illustrated in No. 4, present volume, makes an apparatus more simple than his, but we think it would be an infringement on his patent. We do not know that a machine for indicating the rise and fall of tide would be of any practical use.

J. B., of Mo.—We do not think any device could be attached to a steamboat which could be operated successfully to plow a sufficient channel through the sand to admit of a boat of large dimensions to follow after stranding. Your plan for an oscillating propeller is more feasible. Silliman's Journal is published at New Haven, Conn.

C. A., of Miss.—As early as 1731 a patent was granted in England for propelling vessels by driving the water forcibly out at the stern under the water-line by means of a rotary apparatus similar to the rotary blower and winnowing machines. We do not consider it of any value whatever.

I. S., of Va.—A patent cannot be obtained for placing car wheels on independent axles, so as to prevent them from sliding while in the act of turning curves. This is an old arrangement. Axles have also been divided, and their ends coupled together, for the purpose of accomplishing the same result, but without success.

R. H. R., of Mass.—The original patent of Thomas Blanchard for an irregular turning lathe was issued in 1828. It was extended for a period of seven years by the Commissioner of Patents, which, added to the first term of fourteen years, carried the patent to 1849. Congress then, by special act, extended the patent fourteen years longer; therefore it will not expire till 1863.

J. A., of Ill.—Common burning fluid is composed of about nine parts, by measure, of alcohol—which should contain 95 per cent. at least, of pure spirit—and one part of rectified turpentine (camphene). The alcohol is added slowly to the camphene, and carefully stirred, until a thorough mixture is effected. You have, perhaps, failed to obtain a good article, from using either inferior alcohol or camphene. All such burning fluids, owing to their volatile character, are liable to cause accidents by explosion.

A. G. B., of Miss.—Your sketch represents a common cylindrical boiler placed on a metal frame, with a heater attached. There is nothing new in the construction or arrangement of the parts. Portable boilers seated on metal frames are quite common.

D. B. L., of N. Y.—The Examiner who has charge of the cordage machinery class is Mr. Henry Baldwin.

J. F. R., of Iowa.—Your application will come before the Office for examination in about ten days.

S. W. H., of Mo.—We do not know of any journal published in this city devoted to the "amelioration of the condition of the Jews." There is such a society here, whose office is in the "Bible House Building."

A. V., of Ohio.—We cannot inform you where artificial marble wash-basins can be procured.

X, of Va., and others, who expect their communications to receive attention, must observe the rule invariable among editors—that they can receive no attention unless they furnish their names.

Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, December 12, 1857:—

J. A. D., of N. Y., $37; W. A. F., of Conn., $25; S. S., of Tenn., $21; H. H. L., of Ill., $30; V. N. M., of N. C., $25; R. R., of N. Y., $30; A. B. C., of Ga., $25; C. F. S., of ——, $15; R. R. B., of N. Y., $25; G. & G., of N. Y., $250; C. & Q., of Mass., $30; W. D., of Pa., $30; J. S. D., of L. I., $25; A. P., of N. Y., $25; G. L. D., of Pa., $30; R. G., of N. J., $30; M. C., of Mass., $30; C. & B., of Conn., $30; N. R. A., of N. Y., $30; S. B. D., of N. Y., $45; L. K., of L. I., $25.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, December 12, 1857:—

A. B., of Ga.; W. A. F., of Conn.; V. N. M., of N. C.; J. A. D., of N. Y.; J. S. D., of L. I.; R. R. B., of N. Y.; L. K., of L. I.; N. R. A., of N. Y.

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IMPORTANT TO INVENTORS.

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Carrollton, Mo. DANIEL GREGG.
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For the largest List	$300
For the 2d largest List	250
For the 3d largest List	200
For the 4th largest List	150
For the 5th largest List	100
For the 6th largest List	90
For the 7th largest List	80
For the 8th largest List	70
For the 9th largest List	60
For the 10th largest List	50
For the 11th largest List	40
For the 12th largest List	35
For the 13th largest List	30
For the 14th largest List	25
For the 15th largest List	20

Names of subscribers can be sent in at different times and from different Post Offices. The cash will be paid to the orders of the successful competitors immediately after the 1st of January, 1858. Circulars giving further particulars may be had gratis by sending to the publication office, 128 Fulton street.

We hope our friends in the country will avail themselves of the above liberal offer, and while they oblige us they will be benefited to a far greater extent themselves. MUNN & CO., Publishers.

☞ See Prospectus on the next page.

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Science and Art.

Books and Plates.

A book on machinery, or any of the arts, having explanatory plates bound at the rear end, and the descriptions of them scattered throughout some hundreds of pages, evinces great darkness of mind either on the part of the author or publisher. Such books are detested by every person who desires to glean information from their pages, and yet such books are very common. Perhaps the description is near the beginning, or at the middle, and the plate some two or three hundred pages distant. The student in search of knowledge commences, "A is a shaft," and over he turns to the plate which he examines to find A; in his further search after knowledge, he turns back to the letterpress, and reads, "B is a wheel," when over he *wheels* again to the plate to find B; and so on, thus turning and returning from description to plate for every letter of reference. All publications having copper, steel, or other plate illustrations of machinery, to which references are made by letters, should have those plates bound in a separate volume, or on the pages opposite the descriptions—never at the end of the volume. We hope that all publishers of such works will take the hint. "A word to the wise is sufficient."

Fiber of Sorgho Cane.

We have received from P. O. Reilly, of Providence, R. I., a sample of bleached fiber obtained from the Sorgho cane. It is strong and tough, and capable of being employed for making paper or coarse textile fabrics. It was produced by first steeping the cane, like flax, in water for about six days to rot it; then it was boiled in a keir among a caustic lye of five degrees' strength (Beaume) for half an hour, but allowed to steep in the same liquor maintained at 80° Fah. for twelve hours longer. After this, it was taken out and washed, then steeped in warm liquor of chloride of lime for ten hours; then washed again, and finally treated with a liquor of Rothes' anti-chlorine, after which it was dried in the sun. From one hundred pounds of the cane thus treated, sixty-two pounds of fiber were secured. As this process for obtaining fiber from the Sorgho cane appears to be as cheap as that which straw undergoes to form it into pulp, this fiber may be a good substitute for that of straw, and we think a stronger wrapping paper may be made from it. It is, at least, worth a trial for this purpose.

A Batch of Inventions.

The inventive genius of our country would seem to be superior to every "ill that flesh is heir to;" and it is seldom that we have to chronicle a more extraordinary display of this peculiar line of ingenuity than the following letter will show:—

MESSRS. EDITORS—I wish to ask your advice concerning some improvements of which I am the inventor, as I know that there are always persons ready to rob inventors of their productions if they are not properly protected. My inventions are as follows:—A model of an improved cannon lock, which is considered the most practicable yet known; a washing machine on a new principle, that will wash clothes and cleanse wool, and prepare rags for paper mills; a mode of causing cannon to carry twice as far as at present, with the same amount of powder and same heft of ball as those now in use; a glass that will enable a person to see in the dark, doing away with the effect of the pigmentum nigrum of the human eye; together with a plan for taking the ambrotype of a ship at sea long before her topmast can be seen by the naked eye; and a plan for laying the Atlantic cable. S. G.

Troy, N. Y., December 6, 1857.

[Surely, if ever a man was an inventor the author of the above is; and we are almost astonished that any one mind can have applied itself with such success to so many diverse subjects. We hope that some one may be induced to test the practical value of his ideas, as he writes with the confidence of one who has reliance upon facts.—EDS.

Dredging Machines.

MESSRS. EDITORS—You may recollect that I wrote you about one year since in relation to the capability of Osgood's marine dredging machine. On the bar, at the entrance of Honolulu harbor, we have had one of these machines in constant operation in the inner harbor for the past twelve months, working in from twelve to twenty-five feet water, and have found it to equal our utmost wishes, but for the bar or entrance to the harbor, where there is almost a constant swell coming in of from two to five feet rise and fall; I am confident that it cannot be made to do the work. I would like to ascertain what the cost of Howard's machine is, and whether they could not be applied to a common ship's hull, which could be obtained here.

Since first writing, I have been able to find out that the deposit on this bar is packed sand to at least forty feet in depth, and that the only difficulty with us is the raising of the hull of the dredge, and the wrenching of the crane on the fall bucket.

R. A. S. WOOD, Supt. of Public Works.

Honolulu, Sandwich Islands, Oct., 1857.

[We have no doubt but Mr. Howard will furnish our correspondent with the information he desires. It will be difficult to construct a dredger to operate on the bar at Honolulu harbor, owing to the very heavy swell, but we think that some of our ingenious readers who are well versed in this kind of work will be able to provide *the* dredger for the place, and one that will meet all the circumstances.

Improved Railway Signal Apparatus.

The object of this invention, which we transcribe from the London *Engineer*, are improvements in working signal apparatus on railroads. The pipes or tubes containing fluid are arranged along the lines of railways and

Fig. 1

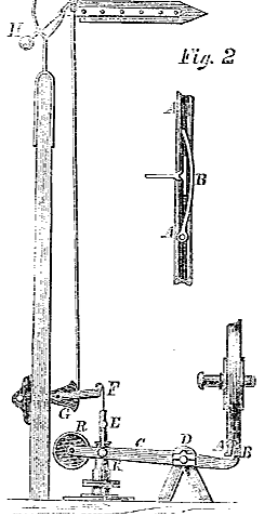
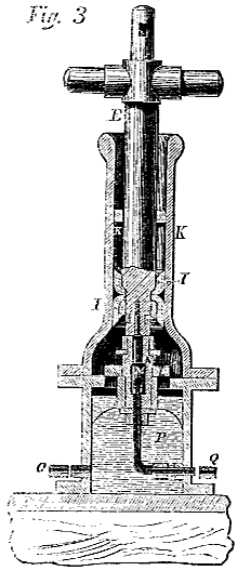


Fig. 2

to each signal apparatus is applied pumping apparatus which communicates with the two ends of the two lengths of pipes or tubes, which respectively communicate forward and backward to two signal stations at distances from each station. The engine man and conductor of a train, on coming up towards a signal station will, by this arrangement, at once ascertain whether or not the preceding train has passed the next signal station.

Fig. 1 shows the general arrangement of the signal stations which are to be arranged in a continuous series along the whole or a portion of the length of a line of railway. A is one of the rails of the line of railway; and B is a lever placed by the side of this rail, and mounted on an axis of one of its ends; a side view of this lever is shown at Fig. 2. On the passage of a train the flanges of the wheels press on the lever, B, and thus cause the lever C to rock on its center, D, and raise the piston rod, E, of the apparatus, shown in section on an enlarged scale at Fig. 3. When the piston rod, E, is thus raised, the hook, F, connected with its upper end is removed from the

Fig. 3



end of the lever, G, and the signal arm is left free to be raised by the weight, H, into the position shown. At the lower end of this piston rod, E, is a piston composed of two cupped leathers, I I; and K is a cylinder up which this piston is drawn when the lever, B, is acted on by a passing train, as already described. This movement of the piston causes the vulcanized india rubber valve, to open, and the valve, M, formed of a ball of the same material to close against its seat, and at the same time fluid passes from the signal apparatus behind, through the pipe, O, into the chamber, P. When the piston is raised it remains up until the train that raised it arrives at the next signal station, but when the piston at that station is raised a vacuum is produced which draws the fluid through the pipe, Q, from under the piston of the first station into the chamber, P, at the second station, and the piston at the first station therefore descends, and the weight, R, at the end of the lever, C, pulls down the signal arm. In a similar way the signal arm at the second station is lowered when the train arrives at the third station, and so on thus throughout the whole length of the line where the apparatus is applied; whenever a train passes a signal station a signal will be raised at that station, and this signal will not be lowered until the train arrives at the next signal station.

Lymph.

This is the liquid portion of the blood without the coloring matter, and may be considered as dilute serum. It is yellow and sometimes opalescent, and coagulates in ten or fifteen minutes into a clear, yellow, tremulous jelly, and deposits a coagulation of fibrin. The remaining fluid is thick and oily, and under the microscope it exhibits a structure of corpuscles or minute congregations of matter. It is composed chemically of nine hundred and eighty-three parts of water, with four-tenths of a part of fibrin and six parts of albumen together with more than seven parts of earthy and other substances.

Inertia.

This term is used to denote the principle or law of the material world, that all bodies are absolutely passive or indifferent to a state of rest or motion, and would continue for ever at rest, or persevere in the same uniform rectilinear motion, were it not for the action of some extraneous force. Inertia is one of the inherent properties of matter, and unceasingly offers itself for our observation during every action of our lives.

Literary Notices.

BRITISH REVIEWS—Leonard Scott & Co., of this city, have for many years issued American reprints of Blackwood's Magazine, (tory.) London Quarterly, (conservative,) Edinburgh Review, (whig,) North British Review, (Free Church,) Westminster Review, (liberal). These periodicals ably represent the three great political parties of Great Britain—whig, tory and radical—but politics forms only one feature of their character. As organs of the most profound writers on science, literature, morality, and religion, they stand, as they ever have stood, unrivaled in the world of letters, being considered indispensable to the scholar and the professional man, while to the intelligent reader of every class they furnish a more correct and satisfactory record of the current literature of the day, throughout the world, than can be possibly obtained from any other source. For any one of the reviews, $3 per annum; for all the above works, $10. The price of the same in England is $31.

THE NORTH-WESTERN REVIEW—Edited and published by H. H. Belding, of Keokuk, Iowa. This periodical is a credit to the city which produces it; it is well printed on good paper, and with readable type, and contains articles of general interest to the emigrant settler, and dweller in the agricultural cities. A Chapter to Emigrants is the title of its leader for November; and it is full of good, sound, and practical advice, while its assorted matter is of an instructive and entertaining character.

THE LONDON QUARTERLY—For October—contains eight papers of rare merit. They are Cornwall, Tom Brown's School Days, Communication with India, Venetian Embassy at the Court of James I, a Voyage to Iceland, The Parish Priest, George Stephenson and Railway Locomotion, Indian Mutiny. We would here remark that the papers in this Quarterly upon the Indian mutiny appear to be remarkably reliable, and free from objection. They are ably prepared.

HUNT'S MERCHANTS' MAGAZINE, for December.—This is an excellent number of an excellent periodical. The article on The Panic and Financial Crisis of 1857, is a lesson on social economy that should be read by every one. The question of Who gains by Credit Money? is also ably and well discussed; and the smaller items and notices are of value and interest.

We have received a copy of the Introductory Lecture delivered by Dr. D. W. Brickell, Professor of Obstetrics in the New Orleans School of Medicine. It is interesting and instructive.

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Reports of American Patents granted are also published every week, including Official Copies of all the PATENT CLAIMS. These Patent Claims are furnished from the Patent Office Records expressly for this paper, and published in the SCIENTIFIC AMERICAN *in advance of all other publications.*

Mechanics, Inventors, Engineers, Chemists, Manufacturers, Agriculturists, and people in every profession of life, will find the SCIENTIFIC AMERICAN to be of great value in their respective callings. Its counsels and suggestions will save them hundreds of dollars annually, besides affording them a continual source of knowledge, the value of which is beyond pecuniary estimate. Much might be added to this Prospectus, to prove that the SCIENTIFIC AMERICAN is a publication which every Inventor, Mechanic, Artisan, and Engineer in the United States should patronize; but the publication is so thoroughly known throughout the country that we refrain from occupying further space.

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